

What is claimed is:

1. A knee prosthesis comprising:

a femoral component adapted to fit on a distal end of a femur, the femoral component including a lateral condylar structure and a medial condylar structure;

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an accommodation structure configured to cooperate with the femoral component, the accommodation structure including a distal surface and a posteriolateral proximal surface that slopes toward the distal surface as the posteriolateral surface progresses in a posterior direction, the surface adapted to
10 cooperate with the lateral condylar structure of the femoral component to impart internal rotation on the tibia as the knee flexes from substantially zero degrees of flexion to substantially 130 degrees of flexion.

2. The knee prosthesis of claim 1 wherein the accommodation structure is a
15 component that is mounted on a tibia.

3. The knee prosthesis of claim 1 wherein the accommodation structure is part of a tibial implant.

20 4. The knee prosthesis of claim 1 wherein the accommodation structure is part of an insert which is adapted to fit between the femoral component and a tibial implant.

5. The knee prosthesis of claim 1 wherein the posteriolateral surface includes a portion that is convex.

6. The knee prosthesis of claim 1 wherein the posteriolateral surface includes a portion that is substantially flat.

7. The knee prosthesis of claim 1 wherein the posteriolateral surface includes a portion that is substantially concave.

8. The knee prosthesis of claim 4 further comprising a tibial implant.

9. The knee prosthesis of claim 1 wherein the internal rotation of the tibia is at least substantially 8 degrees relative to the femur at substantially 130 degrees of flexion and greater flexion angles.

10. The knee prosthesis of claim 1 wherein the medial condylar structure of the femoral component is greater in size than the lateral condylar structure of the femoral component, and the accommodation structure is thicker in at least some areas that cooperate with the lateral condylar structure of the femoral component than in corresponding areas that cooperate with the medial condylar structure of the femoral component.

11. The knee prosthesis of claim 1 wherein a line between the distal most surfaces of the medial condylar structure and the lateral condylar structure, at a flexion angle of substantially zero degrees, is oriented at an angle of approximately

3 degrees from a line that is perpendicular to the mechanical axis of a leg in which the knee prosthesis is implanted.

12. The knee prosthesis of claim 1 wherein the accommodation structure comprises a raised portion on a proximal surface and the femoral component includes a cam having a surface for cooperating with an anterior surface of the raised portion in order to provide an anterior stabilizing force at some angles of flexion.

13. The knee prosthesis of claim 1 wherein the accommodation structure comprises a raised portion on a proximal surface and the femoral component includes a cam which includes a surface for cooperating with a posterior surface of the raised surface on the accommodation structure in order to assist in imparting internal rotation to the tibia relative to the femur at angles of flexion between the tibia and the femur of 50 degrees or greater.

14. The knee prosthesis of claim 13 wherein the cam has an asymmetrical shape such that the lateral side of the cam is larger than the medial side.

15. The knee prosthesis of claim 1 wherein the accommodation structure includes edges adjacent its proximal surface which are rounded.

16. The knee prosthesis of claim 1 wherein the accommodation structure and the femoral component are configured to allow the femur and tibia to flex approximately 155° relative to each other, and whereby at said 155° angle, the tibia is internally rotated at an angle of at least substantially 8 degrees relative to the femur.

5 17. The knee prosthesis of claim 1 wherein lateral portions of the femoral component anterior surface extend further in an anterior direction than medial portions of the femoral component anterior surface, whereby the anterior surface of the femoral component is adapted to assist in precluding subluxation of the patella.

10 18. The knee prosthesis of claim 1 wherein the accommodation structure includes a proximal lateral surface with an arcuate swept surface, the swept surface adapted to assist in guiding tracking of lateral structure of the femoral component on the proximal surface during at least some ranges of flexion between the tibia and the
15 femur.

19. The knee prosthesis of claim 1, wherein the posterior surface of the medial condylar portion of the femoral component extends no farther than approximately 2 mm beyond the posterior surface of the accommodation structure at substantially full
20 extension.

20. A knee prosthesis comprising:

a femoral component adapted to fit on a distal end of a femur, the femoral component including a lateral condylar structure and a medial condylar structure, the

medial condylar structure being larger than the lateral condylar structure in at least some corresponding dimensions; and

an accommodation structure including a distal surface and a posteriolateral proximal surface that slopes toward the distal surface as the posteriolateral surface progresses in a posterior direction.

21. The knee prosthesis of claim 20 wherein the accommodation structure is a component that is mounted on a tibia.

22. The knee prosthesis of claim 20 wherein the accommodation structure is part of a tibial implant.

23. The knee prosthesis of claim 20 wherein the accommodation structure is part of an insert which is adapted to fit between the femoral component and a tibial implant.

24. The knee prosthesis of claim 20 wherein the posteriolateral surface includes a portion that is convex.

25. The knee prosthesis of claim 20 wherein the posteriolateral surface includes a portion that is substantially flat.

26. The knee prosthesis of claim 20 wherein the posteriolateral surface includes a portion that is substantially concave.

27. The knee prosthesis of claim 26 further comprising a tibial implant.

28. The knee prosthesis of claim 20 wherein the internal rotation of the tibia is at least substantially 8 degrees relative to the femur at substantially 130 degrees of flexion and greater flexion angles.

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29. The knee prosthesis of claim 20 wherein the accommodation structure is thicker in at least some areas that cooperate with the lateral condylar structure of the femoral component than in corresponding areas that cooperate with the medial condylar structure of the femoral component.

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30. The knee prosthesis of claim 20 wherein a line between the distal most surfaces of the medial condylar structure and the lateral condylar structure, at a flexion angle of substantially zero degrees, is oriented at an angle of approximately 3 degrees from a line that is perpendicular to the mechanical axis of a leg in which the knee prosthesis is implanted.

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31. The knee prosthesis of claim 20 wherein the accommodation structure comprises a raised portion on a proximal surface and the femoral component includes a cam having a surface for cooperating with an anterior surface of the raised portion in order to provide an anterior stabilizing force at some angles of flexion.

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32. The knee prosthesis of claim 20 wherein the accommodation structure comprises a raised portion on a proximal surface and the femoral component

includes a cam which includes a surface for cooperating with a posterior surface of the raised surface on the accommodation structure in order to assist in imparting internal rotation to the tibia relative to the femur at angles of flexion between the tibia and the femur of 50 degrees or greater.

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33. The knee prosthesis of claim 32 wherein the cam has an asymmetrical shape such that the lateral side of the cam is larger than the medial side.

34. The knee prosthesis of claim 20 wherein the accommodation structure
10 includes edges adjacent its proximal surface which are rounded.

35. The knee prosthesis of claim 20 wherein the accommodation structure and the femoral component are configured to allow the femur and tibia to flex approximately 155° relative to each other, and whereby at said 155° angle, the tibia
15 is internally rotated at an angle of at least substantially 8 degrees relative to the femur.

36. The knee prosthesis of claim 20 wherein lateral portions of the femoral component anterior surface extend further in an anterior direction than medial
20 portions of the femoral component anterior surface, whereby the anterior surface of the femoral component is adapted to assist in precluding subluxation of the patella.

37. The knee prosthesis of claim 20 wherein the accommodation structure includes a proximal lateral surface with an arcuate swept surface, the swept surface

adapted to assist in guiding tracking of lateral structure of the femoral component on the proximal surface during at least some ranges of flexion between the tibia and the femur.

5 38. The prosthetic device of claim 20, wherein the posterior surface of the medial condylar portion of the femoral component extends no farther than approximately 2 mm beyond the posterior surface of the accommodation structure at substantially full extension.

10 39. A knee prosthesis comprising:

 a femoral component adapted to fit on a distal end of a femur, the femoral component including a lateral condylar structure and a medial condylar structure, the medial condylar structure of a size different than the size of the lateral condylar structure; and

15 an accommodation structure adapted to cooperate with the femoral component, the accommodation structure including a proximal surface for cooperating with the lateral condylar structure and medial condylar structure of the femoral component;

 wherein a line between points at which the lateral condylar structure and the
20 medial condylar structure contact the accommodation structure proximal surface at substantially zero degrees of knee flexion is oriented substantially three degrees from a line that is perpendicular to the mechanical axis of a leg in which the prosthesis is implanted.

40. The knee prosthesis of claim 39 wherein the accommodation structure is a component that is mounted on a tibia.

5 41. The knee prosthesis of claim 39 wherein the accommodation structure is part of a tibial implant.

42. The knee prosthesis of claim 39 wherein the accommodation structure is part of an insert which is adapted to fit between the femoral component and a tibial
10 implant.

43. The knee prosthesis of claim 42 further comprising a tibial implant.

44. The knee prosthesis of claim 39 wherein the internal rotation of the tibia is at
15 least substantially 8 degrees relative to the femur at substantially 130 degrees of flexion and greater flexion angles.

45. The knee prosthesis of claim 39 wherein the accommodation structure is thicker in at least some areas that cooperate with the lateral condylar structure of the
20 femoral component than in corresponding areas that cooperate with the medial condylar structure of the femoral component.

46. The knee prosthesis of claim 39 wherein the accommodation structure includes a distal surface and a posteriolateral proximal surface that slopes toward
25 the distal surface as the posteriolateral surface slopes in a posterior direction.

47. The knee prosthesis of claim 39 wherein the accommodation structure comprises a raised portion on a proximal surface and the femoral component includes a cam having a surface for cooperating with an anterior surface of the raised portion in order to provide an anterior stabilizing force at some angles of flexion.

48. The knee prosthesis of claim 39 wherein the accommodation structure comprises a raised portion on a proximal surface and the femoral component includes a cam which includes a surface for cooperating with a posterior surface of the raised surface on the accommodation structure in order to assist in imparting internal rotation to the tibia relative to the femur at angles of flexion between the tibia and the femur of 50 degrees or greater.

49. The knee prosthesis of claim 48 wherein the cam has an asymmetrical shape such that the lateral side of the cam is larger than the medial side.

50. The knee prosthesis of claim 39 wherein the accommodation structure includes edges adjacent its proximal surface which are rounded.

51. The knee prosthesis of claim 39 wherein the accommodation structure and the femoral component are configured to allow the femur and tibia to flex approximately 155° relative to each other, and whereby at said 155° angle, the tibia

is internally rotated at an angle of at least substantially 8 degrees relative to the femur.

52. The knee prosthesis of claim 39 wherein lateral portions of the femoral component anterior surface extend further in an anterior direction than medial portions of the femoral component anterior surface, whereby the anterior surface of the femoral component is adapted to assist in precluding subluxation of the patella.

53. The knee prosthesis of claim 39 wherein the accommodation structure includes a proximal lateral surface with an arcuate swept surface, the swept surface adapted to assist in guiding tracking of lateral structure of the femoral component on the proximal surface during at least some ranges of flexion between the tibia and the femur.

54. The prosthetic device of claim 39, wherein the posterior surface of the medial condylar portion of the femoral component extends no farther than approximately 2 mm beyond the posterior surface of the accommodation structure at substantially full extension.

55. A knee prosthesis comprising:
a femoral component adapted to fit on a distal end of a femur, the femoral component including a lateral condylar structure and a medial condylar structure;
and

an accommodation structure including a lateral bearing surface and a medial bearing surface, which bearing surfaces are shaped differently from each other to impart internal rotation to the tibia relative to the femur as the knee flexes from substantially zero to substantially 130 degrees of flexion, and

5 wherein a line between points at which the femoral component lateral condylar structure and the medial condylar structure respectively contact the accommodation structure bearing surfaces at substantially zero degrees of knee flexion is oriented substantially three degrees from a line that is substantially perpendicular to the mechanical axis of a leg in which the prosthesis is implanted.

10 56. The knee prosthesis of claim 55 wherein the accommodation structure is a component that is mounted on a tibia.

15 57. The knee prosthesis of claim 55 wherein the accommodation structure is part of a tibial implant.

58. The knee prosthesis of claim 55 wherein the accommodation structure is part of an insert which is adapted to fit between the femoral component and a tibial implant.

20 59. The knee prosthesis of claim 58 further comprising a tibial implant.

60. The knee prosthesis of claim 55 wherein the internal rotation of the tibia is at least substantially 8 degrees relative to the femur at substantially 130 degrees of flexion and greater flexion angles.

61. The knee prosthesis of claim 55 wherein the medial condylar structure of the femoral component is greater in size than the lateral condylar structure of the femoral component, and the accommodation structure is thicker in at least some areas that cooperate with the lateral condylar structure of the femoral component than in corresponding areas that cooperate with the medial condylar structure of the femoral component.

62. The knee prosthesis of claim 55 wherein the accommodation structure includes a distal surface and a posteriolateral proximal surface that slopes toward the distal surface as the posteriolateral surface progresses in a posterior direction.

63. The knee prosthesis of claim 55 wherein the accommodation structure comprises a raised portion on a proximal surface and the femoral component includes a cam having a surface for cooperating with an anterior surface of the raised portion in order to provide an anterior stabilizing force at some angles of flexion.

64. The knee prosthesis of claim 55 wherein the accommodation structure comprises a raised portion on a proximal surface and the femoral component includes a cam which includes a surface for cooperating with a posterior surface of the raised surface on the accommodation structure in order to assist in imparting

internal rotation to the tibia relative to the femur at angles of flexion between the tibia and the femur of 50 degrees or greater.

65. The knee prosthesis of claim 64 wherein the cam has an asymmetrical shape
5 such that the lateral side of the cam is larger than the medial side.

66. The knee prosthesis of claim 55 wherein the accommodation structure includes edges adjacent its proximal surface which are rounded.

10 67. The knee prosthesis of claim 55 wherein the accommodation structure and the femoral component are configured to allow the femur and tibia to flex approximately 155° relative to each other, and whereby at said 155° angle, the tibia is internally rotated at an angle of at least substantially 8 degrees relative to the femur.

15 68. The knee prosthesis of claim 55 wherein lateral portions of the femoral component anterior surface extend further in an anterior direction than medial portions of the femoral component anterior surface, whereby the anterior surface of the femoral component is adapted to assist in precluding subluxation of the patella.

20 69. The knee prosthesis of claim 55 wherein the accommodation structure includes a proximal lateral surface with an arcuate swept surface, the swept surface adapted to assist in guiding tracking of lateral structure of the femoral component on

the proximal surface during at least some ranges of flexion between the tibia and the femur.

70. The knee prosthesis of claim 55, wherein the posterior surface of the medial condylar portion of the femoral component extends no farther than approximately 2 mm beyond the posterior surface of the accommodation structure at substantially full extension.

71. A knee prosthesis comprising:

a femoral component adapted to fit on a distal end of a femur, the femoral component including a lateral condylar structure and a medial condylar structure and a cam located between the lateral condylar structure and the medial condylar structure; and

an accommodation structure including a raised surface that is adapted to cooperate with the cam on the femoral component to impart internal rotation on the tibia as the knee flexes from substantially zero degrees of flexion to substantially 130 degrees of flexion.

72. The knee prosthesis of claim 71 wherein a lateral portion of the cam is larger than a medial portion of the cam.

73. The knee prosthesis of claim 71 wherein the accommodation structure is a component that is mounted on a tibia.

74. The knee prosthesis of claim 71 wherein the accommodation structure is part of a tibial implant.

5 75. The knee prosthesis of claim 71 wherein the accommodation structure is part of an insert which is adapted to fit between the femoral component and a tibial implant.

76. The knee prosthesis of claim 75 further comprising a tibial implant.

10 77. The knee prosthesis of claim 71 wherein the internal rotation of the tibia is at least substantially 8 degrees relative to the femur at substantially 130 degrees of flexion and greater flexion angles.

15 78. The knee prosthesis of claim 71 wherein the medial condylar structure of the femoral component is greater in size than the lateral condylar structure of the femoral component, and the accommodation structure is thicker in at least some areas that cooperate with the lateral condylar structure of the femoral component than in corresponding areas that cooperate with the medial condylar structure of the
20 femoral component.

79. The knee prosthesis of claim 71 wherein a line between the distal most surfaces of the medial condylar structure and the lateral condylar structure, at a flexion angle of substantially zero degrees, is oriented at an angle of approximately

3 degrees from a line that is perpendicular to the mechanical axis of a leg in which the knee prosthesis is implanted.

80. The knee prosthesis of claim 71 wherein the accommodation structure comprises a raised portion on a proximal surface and the femoral component includes a cam having a surface for cooperating with an anterior surface of the raised portion in order to provide an anterior stabilizing force at some angles of flexion.

81. The knee prosthesis of claim 71 wherein the accommodation structure includes a lateral bearing surface and a medial bearing surface, which bearing surfaces are shaped differently from each other to impart internal rotation to the tibia relative to the femur as the knee flexes from substantially zero to substantially 130 degrees of flexion.

82. The knee prosthesis of claim 71 wherein the accommodation structure includes a distal surface and a posteriolateral proximal surface that slopes toward the distal surface as the posteriolateral surface progresses in a posterior direction.

83. The knee prosthesis of claim 71 wherein the accommodation structure includes edges adjacent its proximal surface which are rounded.

84. The knee prosthesis of claim 71 wherein the accommodation structure and the femoral component are configured to allow the femur and tibia to flex

approximately 155° relative to each other, and whereby at said 155° angle, the tibia is internally rotated at an angle of at least substantially 8 degrees relative to the femur.

5 85. The knee prosthesis of claim 71 wherein lateral portions of the femoral component anterior surface extend further in an anterior direction than medial portions of the femoral component anterior surface, whereby the anterior surface of the femoral component is adapted to assist in precluding subluxation of the patella.

10 86. The knee prosthesis of claim 71 wherein the accommodation structure includes a proximal lateral surface with an arcuate swept surface, the swept surface adapted to assist in guiding tracking of lateral structure of the femoral component on the proximal surface during at least some ranges of flexion between the tibia and the femur.

15 87. The prosthetic device of claim 71, wherein the posterior surface of the medial condylar portion of the femoral component extends no farther than approximately 2 mm beyond the posterior surface of the accommodation structure at substantially full extension.

20 88. A knee prosthesis comprising:
a femoral component adapted to fit on a distal end of a femur, the femoral component including a lateral condylar structure and a medial condylar structure, the

geometry of the lateral condylar structure being different from the geometry of the medial condylar structure; and

an accommodation structure including a lateral proximal surface adapted to cooperate with the lateral condylar structure of the femoral component, and a medial proximal surface adapted to cooperate with the medial condylar structure of the femoral component, the geometry of the lateral proximal surface and the medial proximal surface being different from each other, to assist in imparting internal rotation on the tibia relative to the femoral component as the knee flexes from substantially zero degrees of flexion to substantially 130 degrees of flexion.

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89. The knee prosthesis of claim 88, wherein at least one of the differences in geometry is a difference in size.

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90. The knee prosthesis of claim 88, wherein at least one of the differences in geometry is a difference in shape.

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91. The knee prosthesis of claim 88, wherein the accommodation structure includes a posteriolateral proximal surface adapted to cooperate with the lateral condylar structure of the femoral component in at least some angles of flexion of the tibia relative to the femur to impart internal rotation of the tibia relative to the femur.

92. The knee prosthesis of claim 88 wherein the accommodation structure is a component that is mounted on a tibia.

93. The knee prosthesis of claim 88 wherein the accommodation structure is part of a tibial implant.

94. The knee prosthesis of claim 88 wherein the accommodation structure is part of an insert which is adapted to fit between the femoral component and a tibial implant.

95. The knee prosthesis of claim 91 wherein the posteriolateral surface includes a portion that is convex.

96. The knee prosthesis of claim 91 wherein the posteriolateral surface includes a portion that is substantially flat.

97. The knee prosthesis of claim 91 wherein the posteriolateral surface includes a portion that is substantially concave.

98. The knee prosthesis of claim 94 further comprising a tibial implant.

99. The knee prosthesis of claim 88 wherein the internal rotation of the tibia is at least substantially 8 degrees relative to the femur at substantially 130 degrees of flexion and greater flexion angles.

100. The knee prosthesis of claim 88 wherein the accommodation structure is thicker in at least some areas that cooperate with the lateral condylar structure of the femoral component than in corresponding areas that cooperate with the medial condylar structure of the femoral component.

101. The knee prosthesis of claim 88 wherein a line between the distal most surfaces of the medial condylar structure and the lateral condylar structure, at a flexion angle of substantially zero degrees, is oriented at an angle of approximately
5 3 degrees from a line that is perpendicular to the mechanical axis of a leg in which the knee prosthesis is implanted.

102. The knee prosthesis of claim 88 wherein the accommodation structure comprises a raised portion on a proximal surface and the femoral component
10 includes a cam having a surface for cooperating with an anterior surface of the raised portion in order to provide an anterior stabilizing force at some angles of flexion.

103. The knee prosthesis of claim 88 wherein the accommodation structure
15 comprises a raised portion on a proximal surface and the femoral component includes a cam which includes a surface for cooperating with a posterior surface of the raised surface on the accommodation structure in order to assist in imparting internal rotation to the tibia relative to the femur at angles of flexion between the tibia and the femur of 50 degrees or greater.

20 104. The knee prosthesis of claim 103 wherein the cam has an asymmetrical shape such that the lateral side of the cam is larger than the medial side.

105. The knee prosthesis of claim 88 wherein the accommodation structure includes edges adjacent its proximal surface which are rounded.

106. The knee prosthesis of claim 88 wherein the accommodation structure and the femoral component are configured to allow the femur and tibia to flex approximately 155° relative to each other, and whereby at said 155° angle, the tibia is internally rotated at an angle of at least substantially 8 degrees relative to the femur.

107. The knee prosthesis of claim 88 wherein lateral portions of the femoral component anterior surface extend further in an anterior direction than medial portions of the femoral component anterior surface, whereby the anterior surface of the femoral component is adapted to assist in precluding subluxation of the patella.

108. The knee prosthesis of claim 88 wherein the accommodation structure includes a proximal lateral surface with an arcuate swept surface, the swept surface adapted to assist in guiding tracking of lateral structure of the femoral component on the proximal surface during at least some ranges of flexion between the tibia and the femur.

109. The knee prosthesis of claim 88, wherein the posterior surface of the medial condylar portion of the femoral component extends no farther than approximately 2 mm beyond the posterior surface of the accommodation structure at substantially full extension.

110. A prosthetic device for replacing at least a part of the knee comprising:

(a) a first structure adapted to fit on a distal end of a femur, the first structure comprising:

- 5 (i) a first cam for providing an anterior stabilizing force;
- (ii) a second cam having an asymmetrical shape such that a lateral side of the second cam is larger than a medial side;
- (iii) a medial condylar portion and a lateral condylar portion, wherein the medial condylar portion is generally thicker than the lateral condylar portion;

10 (b) a second structure adapted to fit on a proximal end of a tibia, the second structure comprising a tray member for securing the second structure to the tibia and a post that is insertable into the tibial medullary canal; and

(c) a third structure configured to fit between the first and second structures, the third structure comprising:

- 15 (i) a proximal surface, a distal surface, a medial surface, a lateral surface, an anterior surface and a posterior surface;
 - (ii) a raised surface on the proximal surface for providing support to the first structure as the femur and tibia flex relative to each other;
 - (iii) medial and lateral bearing surfaces on the proximal surface for
- 20 engaging an outer surface of the first structure, the medial bearing surface having a concave to flat posterior shape and the lateral bearing surface having a convex to flat posterior shape;

wherein the lateral bearing surface is configured such that a lateral contact point between the lateral condylar portion of the first structure and the lateral bearing surface moves along an arc as the lateral contact point moves in the posterior direction;

5 wherein the tibia and femur rotate relative to each other substantially at a medial contact point between the medial condylar portion of the first structure and the medial bearing surface of the third structure; and

 wherein the third structure is configured to assist the tibia and femur to rotate at least substantially 8 degrees relative to each other as the knee flexes, and to
10 allow the femur and tibia to flex greater than 130 degrees relative to each other.

111. The prosthetic device of claim 110, wherein the third structure further comprises edges between the proximal surface and the medial surface and between the proximal surface and the lateral surface, the edges being rounded such that the
15 third structure is less likely to damage surrounding tissue.

112. The prosthetic device of claim 110, wherein the first cam has a surface for interfacing with an anterior surface on the raised surface on the third structure and provides an anterior stabilizing force during early flexion.

20 113. The prosthetic device of claim 110, wherein the second cam urges rotation of the femur and tibia relative to each other at angles of flexion greater than 50 degrees.

114. The prosthetic device of claim 110, wherein the posterior surface of the medial condylar portion of the first structure extends no farther than approximately 2 mm beyond the posterior surface of the third structure at substantially full extension.

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115. The prosthetic device of claim 110, wherein the third structure is configured to allow the femur and tibia to flex approximately 155 degrees relative to each other, and whereby the tibia is internally rotated at least substantially 8 degrees relative to the femur at a flexion angle of substantially 155 degrees.

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116. A prosthetic device for replacing at least a part of the knee comprising:
a first structure adapted to fit on a distal end of a femur;
a second structure adapted to fit on a proximal end of a tibia; and
a third structure configured to fit between the first and second structures;
wherein the first structure comprises:

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a first surface for engaging a first proximal surface of the third structure;
a second surface for engaging a second proximal surface of the third structure;

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an anterior cam between an anterior portion of the first and second surfaces for providing an anterior stabilizing force to the knee during early flexion;
and

a posterior cam between a posterior portion of the first and second surfaces, the posterior cam larger in lateral portions than in medial portions; and

wherein the third structure comprises:

means adapted to interact with the first structure for inducing internal rotation of the tibia relative to the femur as the knee flexes from substantially 0 degrees to substantially 130 degrees, and

5 means for allowing flexion of greater than 130 degrees of the tibia and femur relative to each other.

117. The prosthetic device of claim 116, wherein the first structure further comprises means for maintaining the height of an epicondylar axis of the femur.

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118. The prosthetic device of claim 116, wherein the means for allowing rotation of the tibia and femur, relative to each other, comprises a substantially convex to flat posterior surface on proximal surface of the third structure.

15 119. A knee prosthesis comprising a femoral component adapted to fit on a distal end of a femur, the femoral component including:

an anterior portion which includes an interior surface adapted to interface with the femur;

a lateral condylar structure which includes a posterior section which in turn includes an interior surface adapted to interface with the femur; and

20 a medial condylar structure which includes a posterior section which in turn includes an interior surface adapted to interface with the femur;

wherein the interior surfaces are adapted to physically capture at least a portion of the femur in the femoral component relative to a distal translation substantially parallel to the anatomic axis of the femur; and

wherein all interior surfaces of the femoral component are adapted to allow the femoral component to clear resected portions of the femur physically as the femoral component is rotated onto the femur about its posterior portions during installation.

120. A knee prosthesis according to claim 119 further comprising:

a tibial component adapted to fit on a proximal end of a tibia; and
a third structure configured to fit between the femoral component and the tibial component.

121. A knee prosthesis according to claim 119 wherein the interior surfaces of the femoral component are substantially planar.

122. A knee prosthesis according to claim 121 wherein the interior surfaces of the condylar structure posterior sections are substantially coplanar with each other.

123. A knee prosthesis according to claim 121 wherein the planes of the interior surfaces of the condylar structure posterior sections converge with the plane of the interior surface of the anterior portion at an angle of between substantially 1 and 30 degrees.

124. A knee prosthesis according to claim 121 wherein the planes of the interior surfaces of the condylar structure posterior sections converge with the plane of the interior surface of the anterior portion at an angle of substantially 15 degrees.

5 125. A knee prosthesis according to claim 119 wherein the interior surfaces of the condylar structure posterior sections are not parallel to the interior surface of the anterior portion.

126. A knee prosthesis according to claim 120 wherein
10 the geometry of the lateral condylar structure is different from the geometry of the medial condylar structure of the femoral component,

the third structure includes a lateral proximal surface adapted to cooperate with the lateral condylar structure of the femoral component, and a medial proximal surface adapted to cooperate with the medial condylar structure of the femoral
15 component, and

the geometry of the lateral proximal surface and the medial proximal surface of the third structure differ in shape from each other, to assist in imparting internal rotation on the tibia relative to the femoral component as the knee flexes from substantially zero degrees of flexion to substantially 130 degrees of flexion.

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